

In the Claims

1. (currently amended) A method for identifying a moving vehicle continuously exceeding a predetermined level of particulate emissions, said method including the steps of:
 - detecting the rate of change of particulate emissions in the atmosphere immediately above of said vehicle at a first detection station;
 - detecting the rate of change of particulate emissions in the atmosphere immediately above of said vehicle at a second detection station downstream of said first station;
 - recording information identifying said vehicle if the rate of change of detected emission of said vehicle at either station exceeds said predetermined level; and
 - comparing examining said recorded information from both stations and identifying said vehicle if its identity appears in said recorded information for both stations[[.]];
 - and observing video information to determine whether a continuous particulate emission has occurred.
2. (currently amended) A method as claimed in claim 1, wherein detection of said predetermined level of particulate emissions at either station enables an image capturing device downstream of its respective detection station for automatic actuation by said vehicle, said image capturing device, capturing a series of images of the particulate emissions of said vehicle and said method further comprises the step of examining said series of images to determine if said vehicle is emitting particulates over a predetermined time period.
3. (original) A method as claimed in claim 2, wherein said image capturing device is triggered by interruptible light beam actuated by said vehicle breaking said light beam.
4. (original) A method as claimed in claim 1, wherein the particulate emissions are de-

tected by the triggering of a smoke detector beam.

5. (original) A method as claimed in claim 1, wherein said particulate emissions are exhaust emissions emitted from a vertical exhaust.

6. (currently amended) A method as claimed in claim 2[[1]], wherein said image capturing device captures an image of the registration number of said vehicle.

7. (original) A method according to claim 6, wherein said image of said registration number is OCR scanned.

8. (cancelled).

9. (original) A method as claimed in claim 2 wherein said image capturing device includes video devices for taking full motion video of an image

10. (original) A method as claimed in claim 1, wherein detecting takes place in a tunnel, a bridge or on open roadway.

11. (original) A method as claimed in claim 1, wherein detecting takes place when said vehicle is travelling above a minimum speed that precludes stop start traffic or is slower than the speed vector of surrounding air in the direction of travel of the vehicle.

12. (currently amended) An apparatus for identifying a moving vehicle exceeding a predetermined level of particulate emissions, said apparatus including:

first detection means for detecting the rate of change of particulate emissions in the atmosphere immediately above of said vehicle at a first detection station;

second detection means for detecting the rate of change of particulate emissions in the atmosphere immediately above of said vehicle at a second detection station downstream of said first station;

recording means for recording information identifying said vehicle if the detected emission of in the atmosphere immediately above said vehicle at either station exceeds said predetermined level and further visually recording the particulate emissions of said vehicle over an extended time period;

comparison means for comparing said recorded information from both stations; and

image recognition means for identifying said vehicle if its identity appears in said recorded information for both stations.

13. (currently amended) A system for identifying a vehicle emitting a high level of particulate emissions, the system comprising:

a first particulate detection system for detecting the rate of change of particulate emission from a vehicle in the atmosphere immediately above the vehicle as it transits a first transit point;

a image triggering means located at a second transit point;

a first imaging means interconnected to said triggering means for imaging vehicles and further visually recording the particulate emissions of said vehicle over an extended time period as they transit said second transit point;

a processing means interconnected to said first particulate detection means and said first imaging means for locating identification parameters associated with the imaged vehicles when said first particulate detection system detects an emission exceeding a predetermined level.

14. (original) A system as claimed in claim 13 wherein said first particulate detection

system is located above a vehicle carriageway.

15. (original) A system as claimed in claim 13 wherein said image triggering means includes a light beam shone across a path substantially perpendicular to the direction of travel of said vehicle either horizontally or vertically.

16. (original) A system as claimed in claim 15 wherein the path of said beam is located at least 2 meters above the contact point of said vehicle with the ground.

17. (original) A system as claimed in claim 13 wherein vehicles normally transit said first and second points in a predetermined direction and said first point is located before said second point.

18. (currently amended) A system as claimed in claim 13 [[18]] further comprising:

 a second particulate detection system for detecting emission from a vehicle as it transits a third transit point;

 a second image triggering means located at a fourth transit point;

 a second imaging means interconnected to said second image triggering means for imaging vehicles as they transit said fourth transit point;

 a second processing means interconnected to said second particulate detection means and said second imaging means for locating identification parameters associated with the imaged vehicles when said second particulate detection system detects an emission exceeding a predetermined level.

19. (original) A system as claimed in claim 18 further comprising a comparison means for comparing vehicles detected by said first processing means and said second processing means to determine if they are the same vehicle and to output an indicator of

sameness.

20. (currently amended) A system as claimed in claim 13[[12]] wherein said first particulate detection system includes a series of particulate emission detection units setup to detect particulate emissions at different heights.